

CLAIMS

CLEAN AMENDED VERSION

1. A device for providing buoyant support to physical structures comprising a body adapted for connection to such structures and contained within a cavity, said cavity being made to contain a liquid and to have walls that generally conform horizontally in their shaping to the shape of the body to be received and immersed in the liquid, said cavity also being made of a size that causes the conformal walls to have a relatively close spacing to the side surfaces of the body so that the contained liquid may exert an upward buoyant force on the immersed body that is greater than the weight of the liquid that the body displaces and generally equal to the volume of the liquid that has the same volume as the body or that portion of the body that is immersed so that the total weight of the device may be reduced by reduction of required liquid without reduction of buoyant force.
2. The device as defined in claim 1, in which the base of the cavity is also made to conform substantially to the base of the body or portion of the body to be immersed and made of a size that will permit the cavity to have a relatively close spacing to both the sides and the base of the body so that a maximum buoyant force may be achieved with the least requirement of liquid support.
3. The device as defined in claim 1, in which the cavity and the body are both made with vertically extended walls of substantially uniform lateral dimensions to permit a substantially uniform horizontal spacing that is maintained at differing levels of body immersion.
4. The device as defined in claim 1, in which the cavity and the body are made to include sloping walls that reduce their spacing as an immersed body increases its displacement to increase the rate of increase in buoyant force as the body descends by increasing the rate of immersion.
5. In a device for providing buoyancy support to physical structures comprising a body contained within a cavity which is made to contain and confine a liquid, the improvement comprising cavity walls that are made to generally conform horizontally in their shaping to the side shaping of the body to be received and immersed in the contained liquid, said cavity also being made of a size that causes the conformally shaped walls to closely confine the space about the body so that the contained liquid may rise more rapidly

about the body, relative to its descent, and immerse it with less displacement, so that an upward buoyant force may be exerted upon the immersed body that is substantially equal to the weight of the liquid that would be displaced by immersion to the same extent under relatively unconfined conditions.

6. The improvement as defined in claim 5, wherein the cavity is further made to conform to the base shaping of the body as well as the side shaping of the body in order to further reduce the liquid weight and volume required to achieve the said buoyant force.

7. The improvement as defined in claim 5, wherein the cavity and the body are made with vertical walls having extended spans of lateral dimensional uniformity to permit a substantially uniform horizontal spacing that is maintained with differing levels of body immersion.

8. The improvement as defined in claim 5, in which the cavity and the body are made to include non-vertical walls that cause the walls to move closer together as the body descends into the cavity so that the rate of increase in buoyancy relative to descent will be made to increase by increasing the rate of immersion.

9. The device as defined in claim 1, wherein the body to which said cavity is made to conform is a preexisting body.

10. The improvement as defined in claim 5, in which the body to which cavity walls are made to generally conform in their shaping is a preexisting body.

15. In a combination made to generate buoyant force, and to demonstrate the principles of its generation, the improved combination that permits the displacement of a volume of liquid to be less than the immersed volume of a body so that the buoyant force exerted on the body may exceed the weight of the displaced liquid, said combination comprising the body, the liquid and a cavity adapted to contain both the liquid and the body, said cavity having walls made to at least partially conform to the shaping of the body and made to be closely spaced from the body when it is placed in the cavity.

16. The combination as defined in claim 15, in which the body to which cavity walls are made to generally conform in their shaping is a body that is preexistent.

17. The combination as defined in claim 15, wherein both the cavity and the body are especially made so that their walls generally conform in shape, one to the other.

18. The combination as defined in claim 15, in which the cavity and the body are made to include non-vertical walls that cause the walls to move closer together as the body descends into the cavity so that the rate of increase in buoyancy relative to descent will be made to increase by increasing the rate of immersion.